

## Recovery Plan Action Status

**Plan Name:** Recovery Plan for *Caesalpinia kavaensis* and *Kokia drynarioides*

**Plan Status:** Final

**Plan Date:** 06-May-94

**Lead Agency:** USFWS

**Lead Office:** Pacific Islands Fish And Wildlife Office

(408)  
(792-9400 )

Species	Action Priority #	Action #	Action Description	Action Status	Est. Initiation Date	Est. Completion Date	Responsible Parties	Work Type	Labor Type	Action Comments
Uhiuhi (Caesalpinia kavaensis), Koki'o (Kokia drynarioides)	1	1110	Tag and monitor all North Kona individuals	Ongoing Not Current	Prior to FY 1995		Department of Hawaiian Home Lands, Kona Dry Forest Working Group	Research: Population Surveys	Contract	While the plants are periodically monitored, a regular monitoring schedule needs to be implemented.
Uhiuhi (Caesalpinia kavaensis), Koki'o (Kokia drynarioides)	1	1111	Prioritize management sites	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Planning	Internal Administrative	This task must be reassessed as new land use is planned or occurs.
Uhiuhi (Caesalpinia kavaensis), Koki'o (Kokia drynarioides)	1	1112	Identify lands that can be protected	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Acquisition: General	Internal Technical Assistance	This task must be reassessed as lands change ownership or agency jurisdiction.
Uhiuhi (Caesalpinia kavaensis), Koki'o (Kokia drynarioides)	1	1113	Determine extent of habitat required for recovery	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Planning	Internal Technical Assistance	More research is needed on the basic biology of the species and habitat restoration capabilities before this can be determined.
Uhiuhi (Caesalpinia kavaensis), Koki'o (Kokia drynarioides)	1	1121	Change state land use class to Conservation, Protected subzone	Partially Complete	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Land Use	Internal Technical Assistance	This task has been completed for 10 <i>Caesalpinia kavaensis</i> individuals in Mt. Kaala Natural Area Reserve on Oahu. Most other populations are in land zoned for agriculture.

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Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	1	1122	Protect habitat leased by the State	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Acquisition: Withdrawal	Internal Administrative	The Puu Waawaa section of State land has been removed from lease status and is in the process of master planning that will include conservation and recreational use. The extent to which it will protect Caesalpinia kavaïensis is unclear at this time. Hualalai Ranch does not lease any State lands with Caesalpinia kavaïensis populations, and so has been removed from responsible parties.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	1	1123	Protect lands owned and leased by Bishop Estate	Complete	Prior to FY 1995	FY 1995 - FY 1999	U.S. Fish and Wildlife Service, Ecological Services Division, PIA Sports Properties, Inc., Kamehameha Schools, Kona Dry Forest Working Group	Acquisition: Management Agreement	Internal Technical Assistance	Bishop Estate, now called Kamehameha Schools, is a member of the Kona Dry Forest Working Group, and as designated 75 acres of the Kaupulehu area, leased to PSPi (also a KDFWG member), as a dry forest preserve.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	1	113	Create / expand germplasm reserves	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Propagation	Contract	Many different botanical gardens have seeds and growing plants of both species, but the ex situ collections are still not complete. In many cases, the genetic source of the plants in collection is unknown, making the collection less valuable for reintroduction efforts.

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Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	1	1141	Improve access to sites and file maps with fire department	Partially Complete	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, Hawaii County Fire Department, Department of Hawaiian Home Lands, Kona Dry Forest Working Group	Management: Habitat Maintenance and Manipulation	Contract	This task has been completed for Kaupulehu, Puu Waawaa, and Kealakehe.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	1	1142	Train liaisons for fire management	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, Hawaii County Fire Department, Kona Dry Forest Working Group	Management: Habitat Maintenance and Manipulation	Contract	Liaisons are in place for Puu Waawaa and Kaupulehu.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	1	1143	Assemble best info. on fire management in fountain grass areas	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, Hawaii County Fire Department	Management: Habitat Maintenance and Manipulation	Contract	There is a Kona fire management group, headed by DLNR, which addresses this task.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	1	1144	Implement updated fire control plan in North Kona	Ongoing Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, Hawaii County Fire Department, Department of Hawaiian Home Lands, Kona Dry Forest Working Group	Management: Habitat Maintenance and Manipulation	Contract	This is a continual task, as long as fountain grass or other highly flammable invasive plant species are present in the North Kona area.

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Uhiuhi (Caesalpinia kavaiense), Koki'o (Kokia drynarioides)	1	1145	Schedule maintenance fire breaks	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, Hawaii County Fire Department, Department of Hawaiian Home Lands, Kona Dry Forest Working Group	Management: Planning	Contract	This is an ongoing task that is carried out for Puu Waawaa, Kaupulehu, and Kealakehe.
Uhiuhi (Caesalpinia kavaiense), Koki'o (Kokia drynarioides)	1	115	Implement a fountain grass control plan for N. Kona	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, Department of Hawaiian Home Lands, Kona Dry Forest Working Group	Management: Habitat Maintenance and Manipulation	Contract	This task is ongoing but not far in Kaupulehu, and has not started at other Kona sites. Eradication of fountain grass from all of North Kona is no longer considered an option, because it is so widespread.
Uhiuhi (Caesalpinia kavaiense), Koki'o (Kokia drynarioides)	1	116	Control ungulate damage in North Kona	Partially Complete	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Habitat Maintenance and Manipulation	Contract	A fence has been constructed around 75 acres in Kaupulehu. Ungulates are not a threat to the Kealakehe population. The Puu Waawaa, Puukala, and newly discovered Waikoloa populations have not been fenced.
Uhiuhi (Caesalpinia kavaiense), Koki'o (Kokia drynarioides)	1	117	Continue alien plant control in North Kona	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, Department of Hawaiian Home Lands, Kona Dry Forest Working Group	Management: Habitat Maintenance and Manipulation	Contract	This task is ongoing at Kaupulehu, but has not been initiated at other populations.

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Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	1	118	Control rodents, game birds and insects as necessary	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Predator and Competitor Control	Contract	Rodent control is ongoing at Kaupulehu, but has not been initiated at other populations. Game bird impacts are monitored at Kaupulehu, and do not appear high. An effective method of black twig borer control is not yet available that is approved for use in natural areas.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	1	119	Manage other limiting factors in North Kona	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, Department of Hawaiian Home Lands, Kona Dry Forest Working Group	Management: Other	Contract	Research is first required on what other limiting factors are before they can be managed. No additional threats are currently known.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	2	21	Research pollination, germination and life cycle	Not Started			Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Population Surveys	Contract	
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	2	210	Develop new techniques based on outcome of research	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Management: General	Contract	This task has not been started because no research has been done yet.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	2	22	Determine extent of inbreeding suppression	Not Started			Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Demographic Studies	Contract	

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Uhiuhi (Caesalpinia kavaiense), Koki'o (Kokia drynarioides)	2	23	Evaluate role of abiotic limiting factors and alien plant competition	Ongoing Not Current	FY 1995 - FY 1999		Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Habitat Status	Contract	Some of this research has been conducted on more common species found within the Kaupulehu preserve by the US Forest Service as a member of the KDFWG, and shows that fountain grass restricts seedling establishment and greatly reduces the growth of species by restricting water available to reach the deep roots of native species.
Uhiuhi (Caesalpinia kavaiense), Koki'o (Kokia drynarioides)	2	24	Determine properties of seed bank	Partially Complete	Prior to FY 1995		Botanical Gardens, Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Propagation	Contract	While no research has been conducted on the wild seed bank, seed storage tests show that this species can be stored under orthodox methods of drying and freezing. Seedlings have appeared in bulldozed areas adjacent to old trees, but it is unclear how old those seeds may have been before germinating.
Uhiuhi (Caesalpinia kavaiense), Koki'o (Kokia drynarioides)	2	25	Research utilization of seeds, seedlings, fruits and flowers	Not Started			Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Predation	Contract	
Uhiuhi (Caesalpinia kavaiense), Koki'o (Kokia drynarioides)	2	26	Research ecology of root symbiots	Not Started			Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Other Information	Contract	

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Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	2	271	Appraise feasibility of biological control	Ongoing Not Current	Prior to FY 1995		Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division, National Park Service, Kona Dry Forest Working Group	Research: Predation	Contract	This task is being pursued by the US Forest Service as a member of the KDFWG.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	2	272	Evaluate use of herbicides for alien plant control	Complete	Prior to FY 1995	FY 2000 - FY 2004	Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division, National Park Service	Research: Management Techniques	Contract	The US Forest Service, as a member of the KDFWG, has conducted several experiments on the use of herbicides vs. other control methods for fountain grass control. To date, the most efficient method with the least impact to the native forest is weedwacking followed by roundup spraying.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	2	273	Evaluate use of cattle grazing for fountain grass control	Not Started			Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division, National Park Service, Kona Dry Forest Working Group	Research: Management Techniques	Contract	This method has not been tested because the current dry forest restoration sites are in areas too rough for cattle grazing. The KDFWG hopes to expand to additional restoration sites in Puu Waawaa where this method can be tested.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	2	28	Research control methods for insects	Ongoing Not Current	Prior to FY 1995		Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division, U.S. Army	Research: Predation	Contract	The Army plans to contract someone to conduct research on black twig borer control, but is having difficulty finding a willing researcher.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	2	29	Evaluate role of other limiting factors	Not Started			Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Management Techniques	Contract	

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Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	2	31	Determine populations to be increased	Complete	Prior to FY 1995	FY 2006	U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Reintroduction	Internal Technical Assistance	All populations need to be increased due to low numbers of mature, reproducing individuals and lack of population structure.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	2	32	Determine techniques for increasing numbers	Complete	Prior to FY 1995	Prior to FY 1995	U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Research: Propagation	Contract	The work by DLNR and KDFWG in North Kona shows that outplanting seedlings is successful.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	2	331	Augment North Kona populations: Select genetic stock for augmentation	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, Kona Dry Forest Working Group, Oahu Genetic Safety Net Program, Maui Nui Genetic Safety Net Program	Management: Propagation	Contract	This task has been initiated for the Kaupulehu population.
Uhiuhi (Caesalpinia kavaïense), Koki'o (Kokia drynarioides)	2	332	Augment North Kona populations: Identify specific areas to augment	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, Kona Dry Forest Working Group, Oahu Genetic Safety Net Program, Maui Nui Genetic Safety Net Program	Management: Propagation	Contract	This task has been initiated for the Kaupulehu population.
Koki'o (Kokia drynarioides)	2	334	Augment North Kona populations: Propagate genetically suitable K. drynarioides plants	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Botanical Gardens, Hawaii Department of Land and Natural Resources, Kona Dry Forest Working Group	Management: Propagation	Contract	This task has been initiated for the Kaupulehu population.

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Uhiuhi (Caesalpinia kavaiense), Koki'o (Kokia drynarioides)	2	335	Augment North Kona populations: Transplant nursery grown plants	Ongoing Not Current	Prior to FY 1995		U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Management: Reintroduction	Contract	This task has been initiated for the Kaupulehu population.
Uhiuhi (Caesalpinia kavaiense), Koki'o (Kokia drynarioides)	3	51	Determine number of populations needed for 200 year survival	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Other: Regulations	Contract	
Uhiuhi (Caesalpinia kavaiense), Koki'o (Kokia drynarioides)	3	52	Determine # of individuals needed for 200 year survival	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Population Surveys	Contract	
Uhiuhi (Caesalpinia kavaiense), Koki'o (Kokia drynarioides)	3	53	Revise recovery objectives	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources	Other: Regulations	Contract	
Uhiuhi (Caesalpinia kavaiense), Koki'o (Kokia drynarioides)	3	54	Determine effects of climate change	Not Started			U.S. Fish and Wildlife Service, Ecological Services Division, Hawaii Department of Land and Natural Resources, U.S. Geological Survey, Biological Resources Division	Research: Other Information	Contract	